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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,568	05/31/2001	David Hernandez		1140

7590 10/04/2005

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EXAMINER	
PHAN, MAN U	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/871,568	HERNANDEZ, DAVID	
	Examiner	Art Unit	
	Man Phan	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The application of Hernandez for a "System and apparatus for block segmentation procedure for reduction of peak-to-average power ratio effects in orthogonal frequency division multiplexing modulation" filed 05/31/2001 has been examined. Responsive to the restriction requirement filed on 01/28/2005, affirmation of the election has been made by applicant, and a provisional election was made with traverse to prosecute the invention of group I, claims 1-21. Claims 22-24 are withdrawn from further consideration by the Examiner, 37 C.F.R. ' 1.142(b), as being drawn to a non-elected invention. Claims 1-21 are pending in the application.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 250 words. It is important that the abstract not exceed 250 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The Abstract of the disclosure is objected to because it contains the legal phraseology "means" (line 2). Correction is required.

Claim Objections

3. Claim 1 recites the limitation "a peak output" in line 3. This should be "the peak output", because it is preceded by the same limitation in line 1.

Claim 20 recites the limitation "a data block" in line 2. This should be "the data block", because it is preceded by the same limitation in claims

Claims 3, 4, 5 lines 2, 1, 1 respectively: "the data" should change to –the data block-- for the consistency. Appropriate correction is required.

Claims 10 are objected to because of the following informalities: The claims contain the phrase "adapted to". It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison, 69 USPQ 138.* Appropriate correction is required.

Claim Rejections - 35 USC # 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 1 12:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 2, 7, 12, 21 are rejected under 35 U.S.C. 1 12, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 1 recites the limitations "the peak output" in line 1, and "the dynamic range" in line 2. There is no antecedent basis for this limitation in the claim.

b. Claim 2 recites the limitations "the signal representation" in line 1. There is no antecedent basis for this limitation in the claims

c. Claim 7 recites the limitations "the total amount of information" in line 2. There is no antecedent basis for this limitation in the claim.

d. Claim 12 recites the limitations "the divided segments" in line 1. There is no antecedent basis for this limitation in the claim.

e. Claim 12 recites the limitations "the comparison groups" in line 1. There is no antecedent basis for this limitation in the claim.

f. Claim 21 recites the limitations "the placement of indicators and data" in line 1. There is no antecedent basis for this limitation in the claim.

g. Claim 21 recites the limitations "the routing of received data" in line 2. There is no antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dulin et al. (US#6,567,387) in view of Cimini, Jr. et al. (US#6,556,557).

With respect to claim 1, Dulin et al. (US#6,567,387) & Cimini, Jr. et al. (US#6,556,557) disclose a novel method and system for reducing peak to average power ratio of OFDM signals utilizing block segmentation procedure, according to the essential features of the claims. Dulin discloses a scheduler that sub-divides the protocol data units into sub-protocol data units, and transmitting them to a subscriber unit (See Fig. 6 and Col. 2, lines 56-65). However, Dulin does not disclose expressly the step of comparing the peak output of a transmission data block to a constant based on the dynamic range of a power amplifier. In the same field of endeavor, Cimini, Ju et al. (US#6,556,557) discloses in Fig. 7 a flow chart depicting the steps of an iterative algorithm utilizing partial transmit sequences for reducing peak to average power ratio (PAPR) of an OFDM signal, in which a calculated peak to average power ratio PAPR (peak output) of a transmission data block being compared to a PAPR (constant) stored in memory. Cimini further discloses determining whether the calculated PAPR is greater than or less than the PAPR stored in memory (Col. 6, lines 25-51). One skilled in the art would have recognized the need for effectively and efficiently reducing PAPR of the OFDM signals, and would have applied Cimini's teaching of the calculation and comparison of transmission data blocks into

Dulin's novel use of the dividing of data blocks into sub-blocks for data transmission. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Cimini Jr.'s method and system for reducing of peak to average power ratio of transmission signals comprising overlapping waveforms into Dulin's system and method for data transmission from multiple wireless base transceiver stations to a subscriber unit with the motivation being to provide a method and system for block segmentation procedure for reduction of PAPR in OFDM communication.

Regarding claim 2, Dulin discloses a receiver with control circuitry being able to re-construct the sub-protocol data units (Col. 8, line 65 – Col. 9, line 13). It would have been obvious to one skilled in the art to have some form of indication within the header (elements 605 and 610 in Fig. 6) of the data being sent, indicating the need for re-construction.

Regarding claim 3, Dulin discloses a number of different indicators clearly distinguishable from one another (Col 8, lines 35-62).

Regarding claim 4, Dulin does not disclose the data being binary and the indicator being non-binary, however Cimini discloses a number of data blocks being assigned a phase factor that is binary (Col 7, lines 16-29). It would have been obvious to one skilled in the art to send the data/indicator in a binary or non-binary form.

Regarding claim 6, Dulin discloses a number of different information, including indicators and sub protocol data units being transmitted together (Col 8, lines 40-64 and see Fig 5 and 6).

Regarding claim 7, Dulin discloses a Reed Solomon encoder (Col. 13 lines 27-34), which one skilled in the art can appreciate performs error correction through adding redundant bits to fill a transmission block.

Regarding claim 8, Dulin does not disclose segments from different user blocks being transmitted together in the same transmission data block. However, Cimini discloses a partial transmit sequence where disjoint sub-blocks are combined (Col 2, lines 30-35). It would have been obvious to one skilled in the art at the time of the invention to modify the teachings of Dulin with the implementation of the Reed Solomon encoder as disclosed by Cimini. The motivation for this is to minimize the PAP (Col. 2 lines 30-35).

Regarding claim 9, Dulin discloses a frame number byte that indicates the frame number to be transmitted (Col 8, lines 40-47).

Regarding claim 10, Dulin discloses a receiver with control circuitry being able to re-construct the sub-protocol data units (Col 8, line 65-Col 9, line 13). One skilled in the art can appreciate some form of indication within the header (elements 605 and 610 in Fig 6) of the data being sent, indicating/initiating the need for re-construction.

Regarding claim 11, Dulin discloses a receiver with control circuitry being able to re-construct the sub-protocol data units (Col. 8, line 65-Col. 9, line 13). Dulin also discloses a frame number byte that indicated the frame number to be transmitted (Col. 8, lines 40-47). It would have been obvious to one skilled in the art that reconstruction is based on the frame number byte.

Regarding claim 12, Dulin discloses transmitting sub-protocol data units and one skilled in the art can appreciate the notification and furthermore the notification being combined with either sub protocol data unit, and the other sub protocol data unit being transmitted individually.

Regarding claim 13, Dulin does not disclose the next data block being transmitted comprising segments from another user data. However, Cimini discloses a partial transmit sequence where disjoint sub-blocks are combined (Col. 2, lines 30-35). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the teachings of Dulin with the transmission of disjoint blocks as disclosed by Cimini. The motivation for this is to minimize the PAP (Col. 2, lines 30-35).

Regarding claim 14, Dulin does not disclose all segments having a power output less that the dynamic range of the power amplifier. However, Cimini discloses comparing a current PAP value to a stored PAP value and selecting the lowest possible value (Col. 6, lines 25-51).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dulin et al. (US# 6,567,387) in view of Cimini, Jr. et al. (US#6,556,557) and further view of Vijayen et al. (US# 6,717,908).

With respect to claim 5, The combined teachings of Dulin and Cimini disclose a phase factor{+1,-1} being multiplied by data (Col. 7, lines 16-29) but do not teach an indicator of 0. However, Vijayen et al. (US#6,717,908) discloses each symbol containing a value in the first set of 0, in a predetermined bit (Col. 7, lines 38 plus). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Dulin

and Cimini with the teachings of Vijayen, who discloses a symbol value of 0, in order to differentiate between indicators and data.

9. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dulin et al. (US# 6,567,387) in view of Cimini, Jr. et al. (US# 6,556,557) and further view of Wu (US# 6,104,760)

With respect to claim 15, The combined teachings of Dulin and Cimini do not disclose the segments being defined by bit positions. However Wu (US#6,104,760) discloses the frames being broken in a predefined format. It would have been obvious to one of the ordinary skill in the art to modify the combined teachings of Dulin and Cimini with the predefined format disclosed by Wu. The motivation for this is to eliminate clipping (Col. 2, lines 22-49).

Regarding claim 16, The combined teachings of Dulin and Cimini do not disclose the indicator being placed in predetermined positions. However, Wu (US#6,104,760) discloses sending a notification in the form of a special predefined data (Col. 2, lines 22-49). The motivation is the same as that for claim 15.

Regarding claim 17, The combined teachings of Dulin and Cimini do not disclose the receiver looking at a majority of the indicators in the transmitted data blocks as a representative sample to diminish the effects of receive errors. However, Wu (US#6,104,760) discloses the receiver receiving indications, and furthermore receiving two consecutive frames, eliminating clipping (receive errors). It would have been obvious to one of the ordinary skill in the ad to modify the combined teachings of Dulin and Cimini with the teachings of Wu, in order to diminish receive errors (Col. 2, lines 22-49).

10. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dulin et al. (US# 6,567,387) in view of Cimini, Jr. et al. (US# 6,556,557) in further view of Wu (US# 6,104,760) and in further view of Tammaru (US# 3,950,616).

With respect to claims 18-19, The combined teachings of Dulin, Cimini and Wu do not disclose the receiver comparing groups of segments to determine the type of indicator. However, Tammaru (US# 3,950,616) discloses a receiver comparing pairs of bits occupying a corresponding bit position (claim 19) in order to detect a control signal (indicator) (Col. 1, lines 40-62 and Col. 2, lines 20-34). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Dulin, Cimini and Wu, with the comparison disclosed by Tammaru. The motivation is to increase the reliability of detecting a framing signal (Col. 1, lines 40-59).

11. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cimini, Jr. et al. (US# 6,556,557) in view of Dulin et al. (US# 6,567,387) in further view of Tammaru (US# 3,950,616).

With respect to claims 20-21, Cimini, Jr. et al. discloses a calculated Peak to average power ratio (peak output) being compared to a Peak to average power ratio (constant) stored in memory (Col. 6, lines 25-51). Cimini discloses determining whether the calculated PAP is greater than or less than the PAP stored in memory. Cimini also discloses a PTS approach, where data blocks are partitioned into a number of disjoint sub blocks (Col. 2, lines 30-36). Cimini also discloses an SLM approach that uses full length IFFT'S in order to transmit as much data per sub block (Col. 5, lines 23-44). However, Cimini does not disclose interspacing with zeroes and

Cimini does not disclose forming comparison groups in the receiver to determine which received bit positions contain user data and which contain zeroes. Dulin discloses a Reed Solomon encoder (Col. 13, lines 28-34), which is well known in the art to insert redundant bits (zeroes) into blocks of data. The motivation to modify the teachings of Cimini, with the Reed Solomon encoding disclosed by Dulin is to minimize the error rate of the transmitted data (Col. 13, lines 28-34). The combined teachings of Cimini and Dulin do not disclose forming comparison groups in the receiver to determine which received bit positions contain user data and which contain zeroes. In the same field of endeavor, Tammaru (US# 3,950,616) discloses a receiver comparing pairs of bits occupying a corresponding bit position (claim 19) in order to detect a control signal (indicator) (Col. 1, lines 40-62 and Col. 2, lines 20-34). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Cimini and Dulin, who disclosed a PTS approach and a Reed Solomon encoder, with the formation of comparison groups as disclosed by Tammaru. The motivation to modify the combined teachings of Dulin and Cimini with the teachings of Tammaru, is to increase the reliability of detecting a framing signal (Col. 1, lines 40-59).

12. Claims 1-21 of this application conflict with claims 1-20 of Application No. 09/871,567 (US#2003/0063556). 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the

conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP. 822.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Awater et al. (US#6,175,551) is cited to show the transmission system and method employing peak cancellation to reduce the peak-to-average power ratio.

The Laird et al. (US#5,991,262) is cited to show the method and apparatus for reducing peak to average power ratio of a composite carrier signal.

The Tellado et al. (US#6,314,146) is cited to show the peak to average power ratio reduction.

The Cimini, Jr. et al. (US#6,928,084) is cited to show the OFDM communication system and method having a reduced peak to average power ratio.

The Cimini, Jr. et al. (US#2003/0133433) is cited to show the method and system for reduction of peak to average power ratio of transmission signals comprising overlapping waveforms.

The Nee (US#6,563,786) is cited to show the OFDM system with selectable rate.

The Matsui (US#2002/0003772) is cited to show the method and apparatus for generating OFDM signal.

The Kim et al. (US#2002/0172184) is cited to show the OFDM modulation communication system for improving ability of data transmission and method thereof.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Man U. Phan whose telephone number is (571) 272-3149. The examiner can normally be reached Monday through Friday from 6:00 am to 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at toll free 1-866-217-9197.

MPhan

09/28/2005

MAN U. PHAN
PRIMARY EXAMINER